

REMARKS/ARGUMENTS

After the foregoing Amendment, claims 1-28 are pending in this application. Claims 1 and 22 have been amended to further recite that effluent is retained within the at least one perforated outer pipe for “a period of time”. Support for these amendments is found in the Specification in paragraph [0051] on pages 14-15. Claim 26 has been amended to more specifically recite that the at least one perforated flushing pipe is permanently positioned within the at least one outer pipe. Support for this amendment can be found throughout the Specification and specifically in paragraph [0037] on page 9 of the Specification and in Figs. 1-6. Claim 26 has been further amended to correct a typographical error. Specifically, the words --one perforated-- have been added to paragraph (d) of claim 26 to read --at least one perforated flushing pipe-- instead of “at least flushing pipe”. Accordingly, no new matter has been added.

Applicant wishes to thank the Examiner for the courtesies extended to Applicant and Applicant’s attorney representatives in a telephone interview held on June 7, 2005. During the interview, the Examiner suggested amending claims 1 and 22 in the manner set forth herein in order to define over U.S. Patent Application Publication No. 2001/0030151 A1 (Tipton et al.) and overcome the rejections of record. Specifically, the Examiner indicated that amending claims 1 and 22 to recite that the effluent is retained within the at least one perforated outer pipe for a period of time would overcome the rejections of claims 1 and 22 in view of Tipton et al.

Claim Rejections – 35 U.S.C. § 102

The Examiner has rejected claims 27 and 28 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Nos. 3,875,056 (Inglis) or 3,925,206 (Dea). The Examiner contends that Inglis and Dea each disclose aerobic biological treatment followed by discharge to a drain field. Applicant respectfully traverses this rejection.

Claim 27 is directed to a method of biological treatment and recites,

- (a) supplying effluent to at least one vessel positioned within a wastewater drain field;
- (b) delivering gas to the at least one vessel to interact with the effluent such that the effluent experiences aerobic biological treatment; and

(c) passing biologically treated effluent from the at least one vessel to the wastewater drain field.

Referring to Figs. 2-6, Inglis discloses various embodiments of a device for sewage treatment. Each device generally includes a tank 1 for containing the daily flow of liquid sewage and remaining sludge from a one-family house or a group of such houses. The sewage enters the tank 1 through an inlet pipe 2 and ultimately exits the tank 1 through an outlet pipe 3. Within the tank 1 is an aerating device A which introduces air to the tank 1 in order to sustain the biological process in the sludge. Upon sufficient treatment, effluent is discharged from the tank 1 through the outlet pipe 3 to discharge lines (not shown) for dispersal in drainage beds (not shown). Referring specifically to Fig. 6, the device includes an electrical timer 29 and a control 18 for controlling operation of the system.

Dea discloses a system 20 for home wastewater treatment and dispersal. Referring to Figs. 1 and 2, the system 20 includes a tank assembly 28 for receiving waste from a home or similar building 22 through influent piping 26. The tank assembly 28 includes a tank 40 containing an aerating assembly 41 and a pumping assembly 42. The aerating assembly 41 includes two diffusers or aerators 64, 66 disposed adjacent a bottom 44 of the tank 40 for aerating waste within the tank 40. Upon sufficient treatment, liquid is removed from the tank 40 by a pump 72 to be carried to a dispersal field 32 by effluent piping 30. A control panel 34, located within the building 22, controls operation of the system 20.

Neither Inglis nor Dea discloses each and every element of claim 27 or claim 28 dependent therefrom. Specifically, neither Inglis nor Dea discloses the supplying of effluent to a vessel positioned within a wastewater drain field, within which gas is delivered to interact with the effluent within the vessel for the aerobic biological treatment of the effluent, as is recited in claim 27. Each of Inglis and Dea discloses the treatment of waste within tanks located away from, and not within, wastewater drain fields. Both Inglis and Dea disclose output pipes which carry treated effluent from the tanks to the wastewater drain fields, where the effluent is ultimately dispersed. As such, neither reference discloses the treatment of effluent within the drain field, itself, as is recited in claim 27. Accordingly, neither Inglis nor Dea discloses each and every element of claim 27 or claim 28 dependent therefrom.

Therefore, Applicant respectfully submits that claims 27 and 28 are in condition for allowance. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

The Examiner has rejected claim 26 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,383,974 (Johnson). The Examiner contends that Johnson discloses the flushing of a drain field by inserting a water jet into a lateral and simultaneously vacuuming the lateral. Applicant respectfully traverses this rejection in view of the foregoing Amendment.

Amended claim 26 is directed to a method of flushing a biological treatment system and recites,

- (a) permanently positioning at least one perforated flushing pipe adapted to receive liquid within at least one outer pipe;
- (b) connecting a vacuum system to an end of the at least one outer pipe;
- (c) starting the vacuum system; and
- (d) supplying the liquid to the at least one flushing pipe such that the liquid is distributed within the at least one perforated flushing pipe and received by the outer pipe before being removed by the vacuum system.

Johnson discloses a method and apparatus for cleaning and rejuvenating septic tank sewage systems, as shown in Figs. 7 and 8. Referring first to Figs. 1 and 2, the apparatus is used with a typical residential drain field septic tank system including one or more septic tanks 2 configured to receive waste products at an inlet 3 from a residence 1. Once treated, clear water waste 6 exits the septic tank 2 at an outlet 8. The clear water waste 6 then flows to one or more drain field laterals 10 located within a drain field 11. Each drain field lateral 10 has a plurality of perforations (not shown) at or near the bottom surface thereof such that clear water waste 6 may flow or seep out of the drain field lateral 10 into the drain field 11. Referring now to Fig. 3, the drain field lateral 10 is located in a tile trench 13 and is surrounded by a bed of gravel or crushed stone 14 to allow water in the drain field lateral 10 to escape through the perforations of the drain field lateral 10. The gravel or crushed stone 14 is typically covered with a layer of untreated

building paper or straw 15 which is then covered with earth 16. A problem with this configuration is that scum and accumulated waste typically builds up over time inside the drain field laterals 10 and on the gravel or crushed stone 14 adjacent the perforations therein.

Referring again to Figs. 7 and 8, a penetrating agitation apparatus is used to remove the scum and accumulated waste before back-ups can occur in order to maintain proper drainage function of the septic tank system and prolong its useful life. The apparatus includes an articulated boom assembly 30 having a hydraulic ram 34 that pivots a first section 31 relative to a platform 32. A second section 36 is pivotably attached to the first section 31 and includes a pencil-like penetrating nozzle 45 made of heavy gauge steel or other materials suitable for penetrating earth and gravel, crushed stone, or sand. The nozzle 45 has perforations 48 therein. A pump (not shown) is used to force air and/or water at a relatively high pressure through the perforations 48 in the penetrating nozzle 45 to create a high pressure jet of air and/or water flowing from the penetrating nozzle 45. The platform 32 of the apparatus is intended to be mounted on a vehicle 45 or trailer (not shown).

Referring to Fig. 4, the apparatus cleans the drain field lateral 10 by positioning the articulated boom assembly 30 proximate the drain field lateral 10. The penetrating nozzle 45 is forced through the earth 16 in order to pierce the building paper or straw 15 and penetrate the gravel, crushed stone, or sand 14 near the drain field lateral 10. Air is then forced at relatively high pressure from the perforations 48 of the penetrating nozzle 45 to agitate the gravel, crushed stone, or sand 14 near the perforations (not shown) of the drain field lateral 10. This agitation causes scum and accumulates waste or debris to be removed from the drain field lateral 10 and trench 13. The boom assembly 30 may be positioned at various points along the drain field lateral 10 during the procedure to agitate different portions of the trench 13 along the length of the drain field lateral 10. In addition to forcing air at high pressure through the perforations 48, a water and air mixture may be forced therethrough to further agitate the area around the drain field lateral 10. Also, a suction may be applied by the pump in alternating fashion with the forcing of air or air and water to further aid in agitation and removal of scum and accumulated waste.

Johnson does not disclose each and every recitation of claim 26. Specifically, Johnson does not disclose a perforated flushing pipe that is permanently positioned within an outer pipe, as is recited in amended claim 26. The system disclosed in Johnson is temporarily inserted within the drain field lateral at various locations in order to clean the drain field lateral. After sufficient cleaning of the drain field lateral, the system is removed from the drain field lateral and inserted within a different portion of the drain field lateral for cleaning thereof or stored for future cleaning of the drain field lateral. That is, the cleaning system of Johnson is not a permanent fixture of the drain field lateral. For at least this reason, Johnson does not disclose each and every recitation of claim 26. Therefore, Applicant respectfully submits that claim 26 is in condition for allowance. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

The Examiner has rejected claims 1, 3, 10, 11, 16, 17, and 21 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application Publication No. 2001/0030151 A1 (Tipton et al.). The Examiner contends that Tipton et al. discloses a biological treatment system comprising a drain field with perforated outer and inner pipes connected to a treatment tank. Applicant respectfully traverses this rejection in view of the foregoing Amendment.

Amended claim 1 is directed to a biological treatment system and recites,

- a wastewater system drain field;
- at least one perforated distribution pipe located within the drain field and adapted to receive effluent; and
- at least one perforated outer pipe surrounding the at least one distribution pipe to receive and retain effluent from the at least one distribution pipe for a period of time and to dispense the effluent to the drain field after it has been biologically treated in the at least one outer pipe.

Referring to Figs. 1-3, Tipton et al. discloses a waste water dispersal system 10 connected by a conduit 12 to a waste water treatment system 14. The dispersal system 10 includes a conduit fork 16, dispersal lines 18 with ports 20, a retaining wall 22, and a bed 24. After being treated within the treatment system 14, waste is carried via the fluid conduit 12 to the dispersal lines 18, from which the waste is dispersed within the bed 24. The dispersal lines 18 include interior discharge pipes 26, which are connected to the conduit 12. Each interior discharge pipe

26 is disposed within the corresponding exterior discharge pipe 28, such that the exterior discharge pipes 28 surround the interior discharge pipes 26. Each of the interior and exterior discharge pipes 26, 28 contain perforations or holes for the dispersal of waste water from the treatment system 14. The waste water flowing through the interior discharge pipe 26 is typically pressurized, while the water in the exterior discharge pipes 28 is discharged by gravity. Because of this dual pipe arrangement, waste water is evenly distributed along the length of the interior discharge pipe 26 due to the pressurization thereof, while, at the same time, the slower gravity flow of the waste water from the exterior discharge pipe 28 protects the surrounding fill material from being eroded away by strong jets of water.

Tipton et al. does not disclose each and every recitation of claim 1 and claims 3, 10, 11, 16, 17, and 21 dependent therefrom. Specifically, Tipton et al. does not teach a perforated outer pipe surrounding a distribution pipe which receives and retains effluent for a period of time. Tipton et al. discloses a system in which treatment occurs within the treatment system 14 and not within the dispersal lines 18 in the drain field. The dispersal lines 18 of Tipton et al., as the name implies, are intended to disperse wastewater, and not retain it therein, as is recited in amended claim 1. In fact, Tipton et al. specifically states that it is related to “a compact, efficient, visually appealing, and economical means for dispersal of treated effluent wastewater from processes such as aerobic treatment systems.” (Paragraph [0005], emphasis added.) As such, the wastewater dispersal system of Tipton et al., which is concerned with the efficient dispersal of treated effluent wastewater, does not teach the retention of effluent within the dispersal lines 18, as is recited in amended claim 1. In fact, as was stated above in the Remarks section, the Examiner suggested amending claim 1 to positively recite that effluent is retained within the outer pipe for a period of time in order to overcome this rejection because, as the Examiner admitted, Tipton et al. does not teach the retention of effluent within the outer pipe for a period of time. Accordingly, Tipton et al. does not disclose each and every recitation of claim 1 or claims 3, 10, 11, 16, 17, or 21 dependent therefrom.

Therefore, Applicant respectfully submits that claims 1, 3, 10, 11, 16, 17, and 21 are in condition for allowance. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Claim Rejections – 35 U.S.C. § 103(a)

The Examiner has rejected claims 18 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Tipton et al. in view of Dea or Inglis. The Examiner admits that claims 18 and 19 differ from Tipton et al. in the recitation of a controller for the effluent. However, the Examiner contends that it is well-known to use a sensor to control discharge from a treatment tank to a drain field, as exemplified by Dea and Inglis. The Examiner further contends that it would have been obvious for one skilled in the art to use a sensor in the treatment tank of the system of Tipton et al. to provide proper dosing to the drain field. Applicant respectfully traverses this rejection.

Claims 18 and 19 both depend from claim 1. As discussed above, Applicant respectfully submits that claim 1, as amended, is in condition for allowance. As such, Applicant submits that claims 18 and 19 are similarly in condition for allowance due to their dependence from claim 1. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

The Examiner has rejected claim 22 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Tipton et al. The Examiner contends that claim 22 differs, if at all, from Tipton et al. in the recitation of biological treatment occurring in the pipe. The Examiner contends that such biological treatment would obviously be inherently occurring in the system of Tipton et al. due to the presence of treating microorganisms. Applicant respectfully traverses this rejection in view of the foregoing Amendment.

Amended claim 22 is directed to a method of biological treatment and recites,

- (a) supplying effluent to at least one perforated distribution pipe;
- (b) discharging the effluent through the at least one perforated distribution pipe;
- (c) receiving the effluent in at least one perforated outer pipe surrounding the at least one distribution pipe and retaining the effluent therein for a period of time such that the effluent experiences biological treatment; and

(d) passing the biologically treated effluent from the at least one perforated outer pipe to a wastewater drain field within which the at least one outer pipe is located.

For reasons similar to those discussed above with respect to the rejection of claim 1, it is respectfully submitted that Tipton et al. does not render claim 22 unpatentable under either 35 U.S.C. § 102(b) or § 103(a). That is, there is no teaching, suggestion, or disclosure in Tipton et al. of retaining effluent within a perforated outer pipe for a period of time such that the effluent experiences biological treatment. As discussed above, Tipton et al. is directed to the efficient dispersal of wastewater from the dispersal lines, and not the retention of wastewater within the dispersal lines. In fact, the retention of wastewater within the dispersal lines of Tipton et al. would be contrary to the teachings of Tipton et al. in that the retention of wastewater within the dispersal lines is in opposition to the efficient dispersal of wastewater. Moreover, as stated above, the Examiner suggested amending claim 22 in the manner set forth herein in order to overcome the rejection of claim 22. The Examiner agreed that Tipton et al. does not teach, suggest, or disclose the retention of effluent within a perforated outer pipe for a period of time such that the effluent experiences biological treatment, as is recited in amended claim 22. For this reason, the Examiner agreed that such an amendment to claim 22 would overcome the current rejection of claim 22. Therefore, it is respectfully submitted that Tipton et al. does not render claim 22, as amended, unpatentable under 35 U.S.C. § 102(b)/103(a).

For all of the above reasons and in view of the amendment to claim 22, Applicant respectfully submits that the rejection of claim 22 is improper. Accordingly, it is requested that the rejection of claim 22 under 35 U.S.C. § 102(b)/103(a) be withdrawn.

The Examiner has rejected claims 25 and 26 under 35 U.S.C. § 103(a) as being unpatentable over Tipton et al. in view of U.S. Patent No. 5,522,672 (Moore) or Johnson. The Examiner admits that claims 25 and 26 differ from Tipton et al. in the recitation of using delivering liquid and using a vacuum to flush the system. The Examiner contends that it is known to deliver liquid and remove it with a vacuum to flush a drain field pipe, as exemplified by Moore and Johnson. The Examiner further contends that it would have been obvious for one skilled in the art to use flush water and a vacuum to flush the drain field pipes of Tipton et al. in order to clean them and prevent clogging. Applicant respectfully traverses this rejection.

Referring to Fig. 1, Moore discloses a system 10 for cleaning a sewage field line 14 from a septic tank 12. The system 10 includes a flush pipe 16 and a vacuum pipe 18. A valve pipe 20 is placed between the pipes 16, 18 and the septic tank 12. The valve pipe 20 is fluidly connected to the field line 14 by a cut-off 30. In use, the cut-off 30 is closed to interrupt the flow of fluid 34 through the field line 14. Cleaning fluid is then flushed through the flush pipe 16 and vacuumed through the vacuum pipe 18. In this way, because the cut-off 30 isolates the pipes 16, 18 from the septic tank 12, the field lines 14 can be cleaned without changing the fluid level in the septic tank 12.

Claim 25 is dependent from amended claim 22. As stated above, Tipton et al. does not render amended claim 22 unpatentable under 35 U.S.C. § 103(a). Therefore, even if Tipton et al. were further combinable with either Moore or Johnson, the resulting combination would not render claim 25 unpatentable under 35 U.S.C. § 103(a). Accordingly, Applicant respectfully requests that the rejection of claim 25 be reconsidered and withdrawn.

With respect to claim 26, assuming Tipton et al. is properly combinable with Moore or Johnson, the modified Tipton et al. device does not disclose each and every recitation of claim 26. Specifically, with respect to the Tipton et al. and Moore combination, the modified Tipton et al. device would not include a perforated flushing pipe within an outer pipe, as is recited in claim 26. Instead, if combined in the manner suggested by the Examiner, the dispersal lines of the Tipton et al. device would include a solid, unperforated flushing tube connected at its end to a sidewall of an outer pipe to essentially form a continuous pipe. That is, the suggested combination would form a single pipe made up of the outer pipe in series with the flushing pipe, and would not form a flushing tube disposed within the outer tube.

With respect to the Tipton et al. and Johnson combination, because Johnson discloses a single apparatus that both flushes and vacuums, modifying the Tipton et al. device to include the Johnson apparatus would not include both a perforated flushing pipe within an outer pipe and a separate vacuum system connected to an end of the outer pipe, as is recited in claim 26. Therefore, it is respectfully submitted that the combination of Tipton et al. and Moore or Johnson does not render claim 26 unpatentable under 35 U.S.C. § 103(a). Accordingly, Applicant

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respectfully submits that the rejection of claim 26 is improper and requests that the rejection of claim 26 under 35 U.S.C. § 103(a) be withdrawn.

Allowable Subject Matter

The Examiner indicated that claims 2, 4-9, 12-15, 20, 23, and 24 would be allowable if rewritten in independent form to include all of the recitations of the base claim and any intervening claims. Each of the claims indicated by the Examiner as allowable depend from one of claims 1 and 22. As discussed above, each of claims 1 and 22, as amended, are believed to be in condition for allowance. As such, each of claims 2, 4-9, 12-15, 20, 23, and 24 are similarly believed to be in condition for allowance due to their dependence from one of claims 1 and 22. Accordingly, Applicant respectfully submits that claims 2, 4-9, 12-15, 20, 23, and 24 are in condition for allowance.

CONCLUSION

In view of the foregoing Amendment and Remarks, Applicant respectfully submits that the present Application, including claims 1-28, as amended, is in condition for allowance and such action is respectfully requested.

Respectfully submitted,
Alan F. Hassett

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(Date)

MARTIN G. BELISARIO
Registration No. 32,886
AKIN GUMP STRAUSS HAUER & FELD LLP
One Commerce Square
2005 Market Street, Suite 2200
Philadelphia, PA 19103-7013
Telephone: 215-965-1200
Direct Dial: 215-965-1303
Facsimile: 215-965-1210
E-Mail: mbelisario@akingump.com

MGB/MPH/rc
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